

PARTIAL ENGLISH TRANSLATION OF JAPANESE LAID-OPEN
PATENT APPLICATION NO.2002-315319 (PARAGRAPHS 0016-
0019):

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[0016]

In the following, another embodiment is described with reference to Fig. 2. In Fig. 2, 1 is an AC power source, 2 is a rectifying unit, and 3 is a smoothing unit. A power source unit includes the AC power source 1 through the smoothing unit 3. Further, 4 is a switching transformer, 5 is a main transistor, 6 is an output current rectifying diode, 7 is an output smoothing condenser, 8 is an output current detecting resistor, and 9 is output current detecting means. An output current detecting unit includes the output current detecting resistor 8, and the output current detecting means 9. Further, 10 is output voltage detecting means, 11 is an output transferring circuit, 12 is a sub-transistor, 13 is an output current, 14 is an output voltage, 15 is a diode for backflow prevention, 16 is a charging control microcomputer, 17 is a condenser for switching stabilization, 20 is a current limiting resistor, and 21 is a photo MOS relay serving as load detecting means. A charging control unit includes the output transferring circuit 11, and the charging control microprocessor 16.

[0017]

30 A method of controlling an output current and an output voltage of the switching power supply unit is as follows: the AC power source 1 provides an AC voltage, which is then converted into DC power by the rectifying unit 2, and the smoothing unit 3; 35 the DC source is converted into pulses by switching of the main transistor 5, and the pulses are provided to the switching transformer 4; output of

the switching transformer 4, that is, the output current 13, and the output voltage 14 of the switching power supply unit are detected by the output current detecting means 9, and the output
5 voltage detecting means 10, respectively; detected results are provided to the charging control unit, which, in turn, controls the sub-transistor 12, and the main transistor 5 is switched accordingly. In this way, the output current 13, and the output
10 voltage 14 are controlled.

[0018]

With no load, that is, the secondary battery is not connected, and no load is connected, there is no battery voltage generated, and therefore,
15 the photo MOS relay 21 is turned off on a MOS side. In this way, the AC power source is intercepted, and the power supply unit is completely turned off; that is, standby power is zeroed.

[0019]

20 Further, while the switching power supply unit is in a standby mode, if the secondary battery is connected, the battery voltage is generated. A photo diode of the photo MOS relay 21 is turned on by the battery voltage, the MOS side is turned on,
25 power supply from the AC power source 1 is restarted, and the normal control can be carried out, i.e., conversion into DC by the power source unit, conversion into pulses by switching control of the main transistor, and providing power to the
30 switching transformer.